

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte SURESH RAMALINGAM, VENKATESAN MURALI  
and DUANE COOK

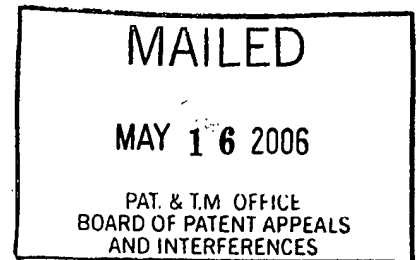
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Appeal No. 2006-1689  
Application No. 09/874,666

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ON BRIEF

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Before KRASS, RUGGIERO, and MACDONALD, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the twice-rejected claims 7-14 and 31-35.

The invention pertains to integrated circuit packages. In particular, an integrated circuit is mounted to a substrate, and the package has a first underfill material and a second underfill material, with the underfill materials being different and the second underfill material having a lower adhesive property than the first underfill material.

Representative independent claim 7 is reproduced as follows:

7. A process for underfilling an integrated circuit that is mounted to a substrate, comprising:

dispensing a first material to form an underfill which becomes attached to the integrated circuit and the substrate; and

dispensing a second material to form a circumferential fillet, the second material being different than the first material and having a lower adhesive property than the first material and becoming attached to the integrated circuit and the substrate.

The examiner relies on the following references:

|                               |           |               |
|-------------------------------|-----------|---------------|
| Ameen et al. (Ameen)          | 0,340,492 | Nov. 08, 1989 |
| (European Patent Application) |           |               |
| Lewis et al. (Lewis)          | 6,020,579 | Feb. 01, 2000 |
| Desai et al. (Desai)          | 6,166,434 | Dec. 26, 2000 |

In addition, the examiner relies on admitted prior art (APA), at page 8, line 19, through page 9, line 2 of the instant specification, as well as comments on page 5 of the response of May 23, 2002, including Appendix A.

Claims 7-14 and 31-35 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner offers Ameen and APA with regard to claims 7, 8, 10-14, and 31-35, adding Desai and Lewis with regard to claim 9.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To reach a conclusion of obviousness under § 103, the examiner must produce a factual basis supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). The examiner may satisfy his/her burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead the individual to combine the relevant teachings of the references. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

In the instant case, the examiner contends, at pages 5-7 of the answer, that Ameen describes the claimed invention but for the second material having a lower adhesive property than the first material.

The examiner relies on appellants' admission that the underfill materials SEMICOAT 5230JP and SEMICOAT 122X were known and used at the time of the filing of the instant application. The examiner points to the Appendix A of the response of May 23, 2002 for appellants' admission that SEMICOAT 5230JP has "Exceptional good moisture resistance to prevent delamination" and that SEMICOAT 122X is "Fillet forming to reinforce crack resistance" (see page 8 of the answer). The examiner concludes therefrom that it would have been obvious to use the prior art SEMICOAT

5230 JP polymeric epoxy underfill material as the polymeric and/or epoxy underfill material of Ameen because “it would provide exceptional moisture resistance to prevent delamination.” The examiner also concludes that it would have been obvious to use the prior art SEMICOAT 122X polymeric epoxy fillet material as the polymeric and/or epoxy fillet material of Ameen because “it would reinforce crack resistance.” Also, the examiner refers to page 8, line 19, through page 9, line 2 of the specification for a finding that the particular claimed relative adhesion property is an inherent property of the prior art materials” (answer-page 9).

We have reviewed the evidence in the case, including, inter alia, the disclosure of the references and the arguments of appellants and the examiner, and we conclude therefrom that the examiner has not established the requisite prima facie case of obviousness with regard to the instant claimed subject matter. Accordingly, we will not sustain the rejection of claims 7-14 and 31-35 under 35 U.S.C. § 103.

The claims require a first material to form an underfill for attaching to the integrated circuit and the substrate. They also require a second material becoming attached to the integrated circuit and substrate and that second material must form a circumferential fillet. Moreover, the claims require that the second material have a lower adhesive property than the first material and that the first and second materials are different.

Now, the examiner admits that the primary reference to Ameen fails to describe the second material having a lower adhesive property than the first material. Thus, in order to find the instant claimed subject as a whole obvious, within the meaning of

35 U.S.C. §103, the examiner must point to something that would have led the artisan to make the final overcoat (second) material 44 in Ameen have a lower adhesive property than the underfill (first) material in space 41.

But rather than point to evidence tending to show why it would have been advantageous to have the second material of lower adhesive property than the first material, the examiner merely points to admissions by appellants that two specific materials, SEMICOAT 5230-JP and SEMICOAT 122X, were known and that the latter has lower adhesion properties than the former. While these two materials may have been well known, the knowledge of these materials still begs the question as to why the mere knowledge of the existence of such materials would have led the artisan to apply this knowledge to the electronic device structure of Ameen in specifically the manner claimed.

The answer, in our view, is that only appellants' disclosure suggests such an application. Absent appellants' direction, the artisan would have had no reason, from the evidence supplied by Ameen and APA, to have used a material to fill Ameen's space 41 that had a higher adhesive property than the material used for the final overcoat 44. Merely because certain materials were well known does not, per se, make it obvious to employ those materials in the specific manner claimed unless something in the prior art, or in the knowledge of the skilled artisan, would have suggested the specific use of those materials in the manner claimed. In our view, the examiner has pointed to no such suggestion.

Moreover, the references to Desai and Lewis, applied with regard to dependent claim 9, do not remedy the deficiency of Ameen and/or APA.

Accordingly, the examiner's decision rejecting claims 7-14 and 31-35 under 35 U.S.C. §103 is reversed.

REVERSED

*Em. H. K.*

ERROL A. KRASS  
Administrative Patent Judge

Joseph E. Bucci

JOSEPH F. RUGGIERO  
Administrative Patent Judge

ALLEN R. MACDONALD

ALLEN R. MACDONALD  
Administrative Patent Judge

# BOARD OF PATENT APPEALS AND INTERFERENCES

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